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**1996 AUTOMOTIVE
TECHNOLOGY DEVELOPMENT
CUSTOMERS' COORDINATION MEETING**



TITLE: LITHIUM ION BATTERIES FOR PNGV APPLICATIONS

SESSION: AUTOMOTIVE R&D POSTER SESSION

DATE: OCTOBER 30, 1996 FROM 1:30 P.M. TO 5:00 P.M.

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PHASE I PROGRAM GOALS

- **EVALUATE LITHIUM ION TECHNOLOGY FOR USE UNDER HIGH POWER PNGV APPLICATIONS**
- **ESTABLISH A UNIT CELL CONFIGURATION FOR PHASE 2 MODULE SCALE UP DEMONSTRATION**
- **DELIVER FOUR PROTOTYPE CELLS FOR INDEPENDENT TESTING**



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BATTERY MINIMUM REQUIREMENTS (SIMPLIFIED)

WEIGHT	65 kg
VOLUME	40 LITERS
ENERGY	3 kwh
POWER ON DISCHARGE (PULSE)	65 kw
REGENERATIVE POWER (PULSE)	70 kw
OPERATING VOLTAGE LIMITS	300 TO 400V
CYCLE LIFE (AT 3.3% DOD)	120,000 CYCLES



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APPROACH

FIRST STEP

- SYSTEMATIC STUDY OF FACTORS AFFECTING POWER
- TESTING HARDWARE: "18650" CELLS

SECOND STEP

- SCALE UP EVALUATION